

CLAIMS

What is claimed is:

1. A method for operating a communication device, comprising steps of:

during a receive period,

receiving a first carrier and deriving a receiver tracking signal that is indicative of a frequency shift between the received first carrier and a reference signal; and

shifting a receiver baseband signal by an amount and in a direction indicated by the receiver tracking signal; and

during a next transmission period,

shifting a transmitter baseband signal by an amount indicated by the receiver tracking signal during the receive period, and in a direction opposite to the direction indicated by the receiver tracking signal during the receive period; and

transmitting a second carrier signal that is modulated in accordance with the shifted transmitter baseband signal.

2. A method as in claim 1, wherein the steps of shifting comprise time multiplexing a digital phase shifter circuit between a receiver baseband subsystem and a transmitter baseband subsystem.

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3. A method as in claim 1, wherein the carrier conveys a CDMA communication signal.

4. A method as in claim 1, wherein a TDD communication device comprises Customer Premises Equipment (CPE), and where the carrier is received from a transmitter of an Access Point (AP).

5. A method as in claim 1, wherein at the end of the receive period a step is performed of storing the receiver tracking signal for use during the next transmission period.

6. A method as in claim 1, wherein the step of shifting the transmitter baseband signal functions to pre-compensate the transmitted second carrier signal so as to reduce carrier acquisition time at a receiver of the transmitted second carrier signal.

7. A communication device comprising a receiver baseband subsystem and a transmitter baseband subsystem, and further comprising:

a receiver comprising circuitry that is operable during a receive period for receiving a carrier and for deriving a receiver tracking signal that is indicative of a frequency and phase shift between the received carrier and a reference signal, said receiver further comprising circuitry for rotating the frequency and phase of a receiver baseband signal by an amount and in a direction indicated by the receiver tracking signal; and

a transmitter comprising circuitry that is operable during a next transmission period for generating a frequency for a transmitter baseband signal that is

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shifted by an amount indicated by the receiver tracking signal, and in a direction opposite to the direction indicated by the receiver tracking signal.

8. A communication device as in claim 7, wherein said shifting circuitry of said transmitter and said receiver comprises a frequency to phase accumulator circuit and a digital phase shifter circuit, and circuitry for time multiplexing said frequency to phase accumulator circuit and said digital phase shifter circuit between said receiver baseband subsystem and said transmitter baseband subsystem.

9. A communication device as in claim 7, wherein the carrier conveys a CDMA communication signal.

10. A communication device as in claim 7, wherein said communication device is a TDD communication device and comprises Customer Premises Equipment (CPE), and where the carrier is received from a transmitter of an Access Point (AP).

11. A communication device in claim 7, and further comprising sample and hold means responsive to an end of the receive period for storing the receiver tracking signal for use during the next transmission period.

12. A Time Division Duplex (TDD) Code Division Multiple Access (CDMA) communication system comprising a plurality of Customer Premises Equipment (CPE) and an Access Point (AP) that communicate through RF links, wherein a CPE comprises a receiver baseband subsystem and a transmitter baseband subsystem and further comprising:

receiver circuitry operable during a receive period for receiving an RF carrier from the AP and for

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deriving a receiver tracking signal that is indicative of an error between the received carrier and a reference signal, said receiver circuitry further comprising a digital phase shifter for correcting the frequency and phase of a receiver baseband signal by an amount and in a direction indicated by the receiver tracking signal;

multiplexing circuitry for sharing said digital phase shifter between said receiver baseband subsystem and said transmitter baseband subsystem; and

transmitter circuitry operable during a next transmission period for operating said digital phase shifter to correct the frequency of a transmitter baseband signal by an amount indicated by the receiver tracking signal, and in a direction opposite to the direction indicated by the receiver tracking signal, for pre-compensating an RF carrier that is transmitted to said AP, so as to reduce carrier acquisition time at a receiver of the AP.

13. A TDD system in claim 12, wherein said CPE further comprises a frequency to phase accumulator having an input coupled to receive said receiver tracking signal and an output coupled to a control input of said digital phase shifter.

14. A TDD system in claim 12, wherein said CPE further comprises a frequency to phase accumulator having an input coupled to receive said receiver tracking signal and an output coupled to a control input of said digital phase shifter, wherein said multiplexing circuitry shares both said frequency to phase accumulator and said digital phase shifter between said receiver baseband subsystem and said transmitter baseband subsystem.

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15. A TDD system in claim 13, wherein said CPE further comprises circuitry responsive to an end of the receive period for storing the receiver tracking signal for use by said digital phase shifter during the next transmission period.

16. A TDD system in claim 12, wherein said CPE further comprises circuitry responsive to an end of the receive period for storing the receiver tracking signal and for inverting said stored receiver tracking signal for use by said digital phase shifter during the next transmission period.

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